Figure 1

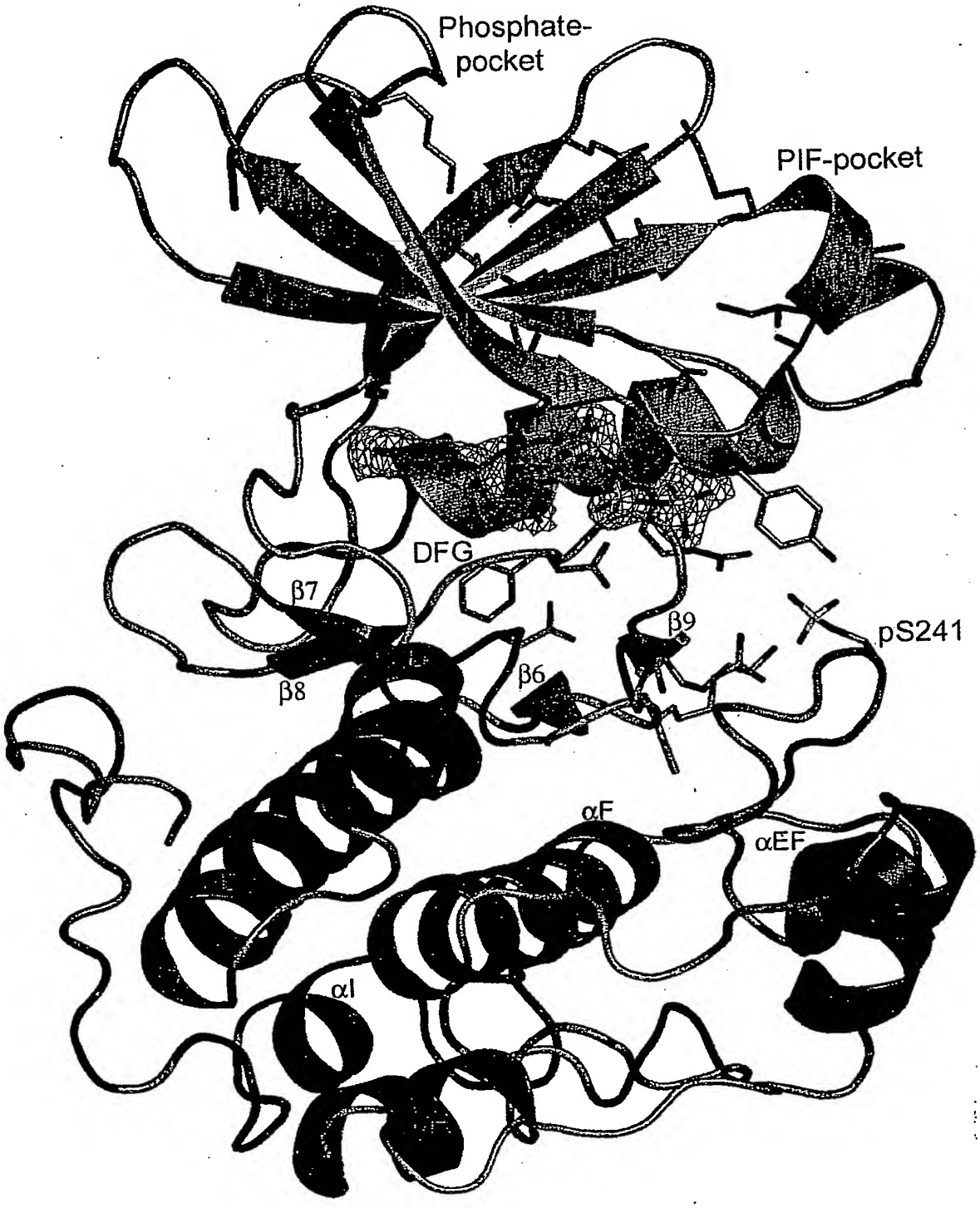
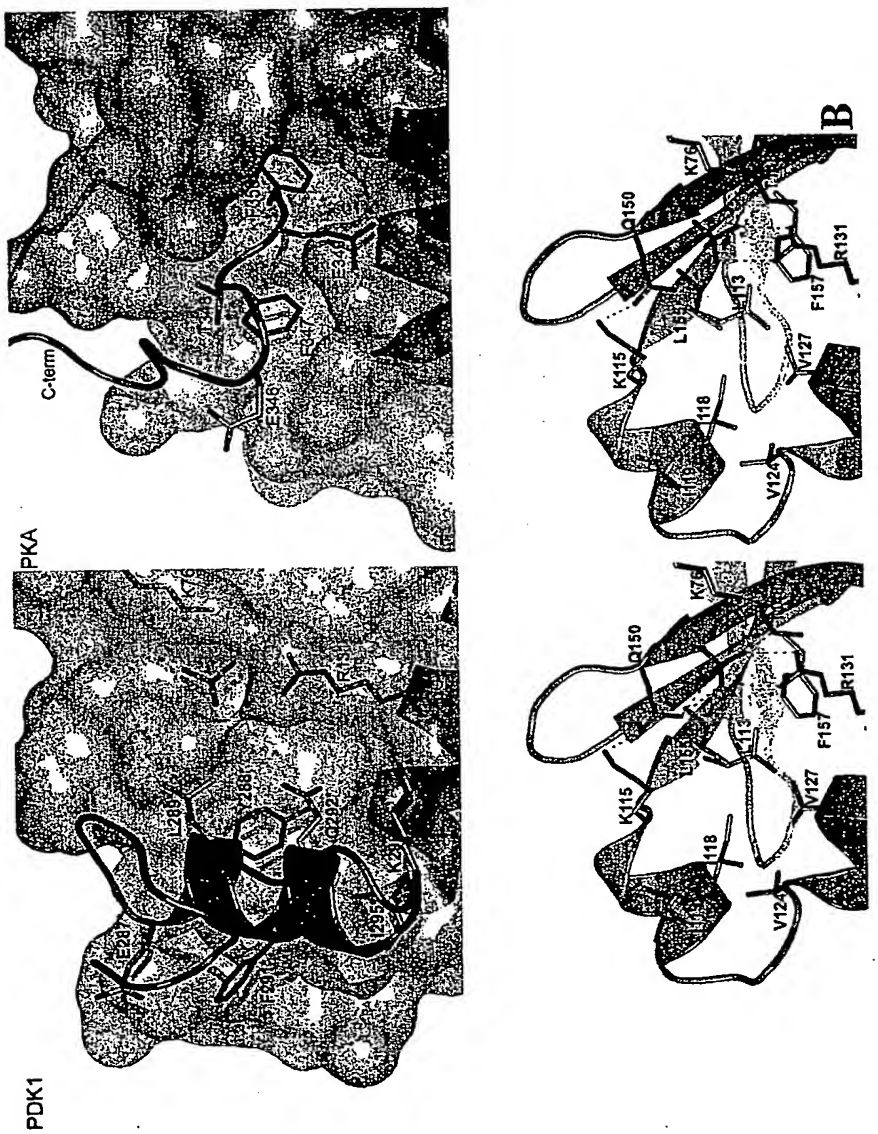


Figure 2



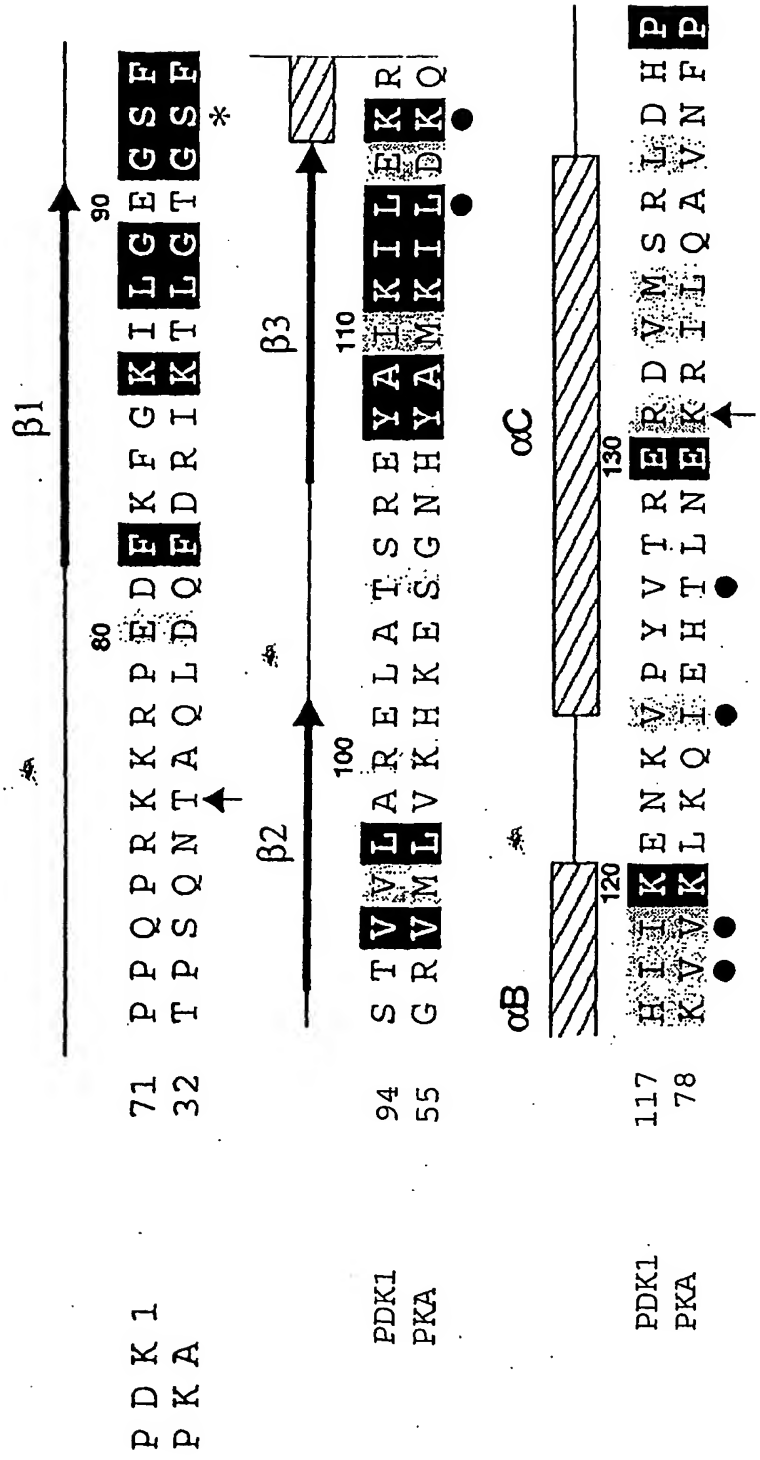


Figure 3:page 1

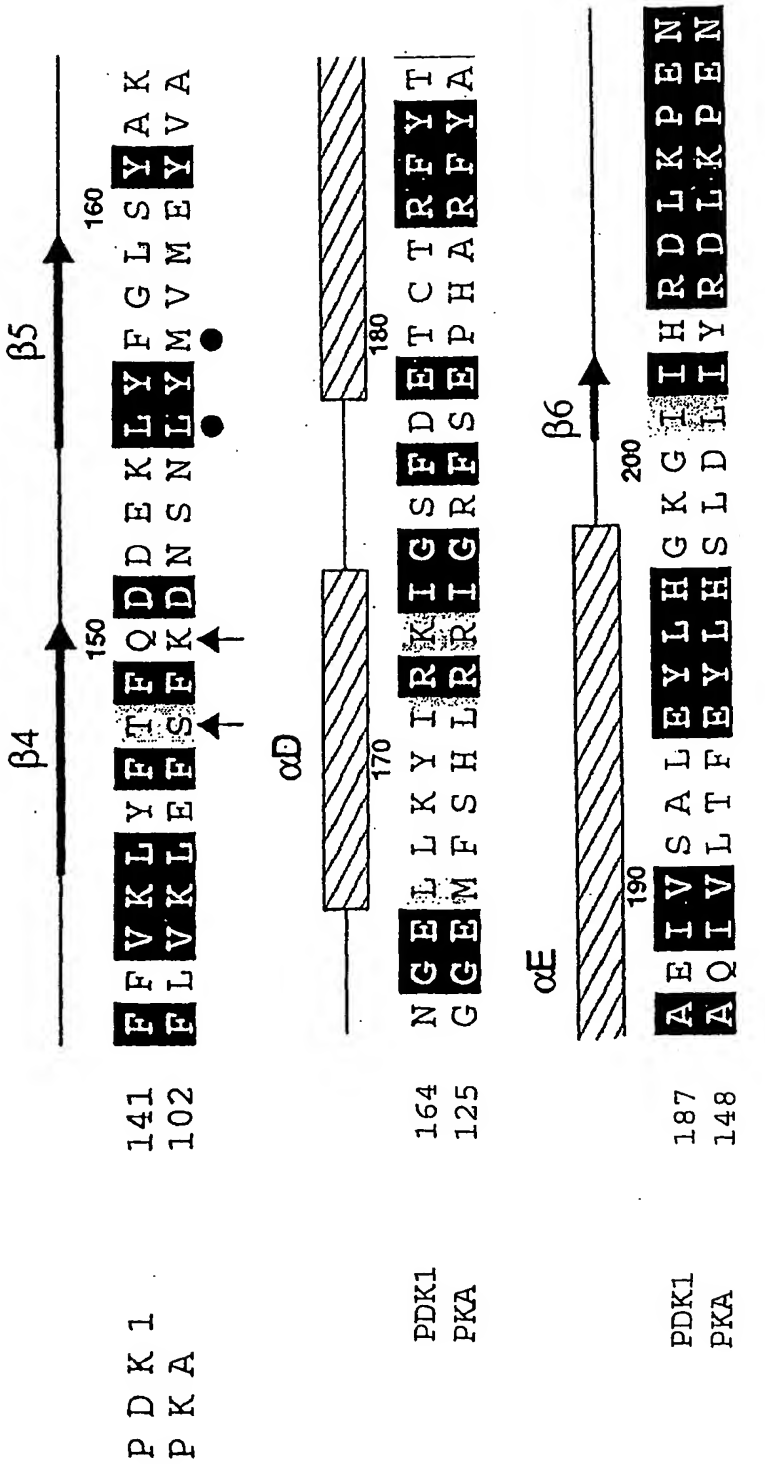


Figure 3 page 2

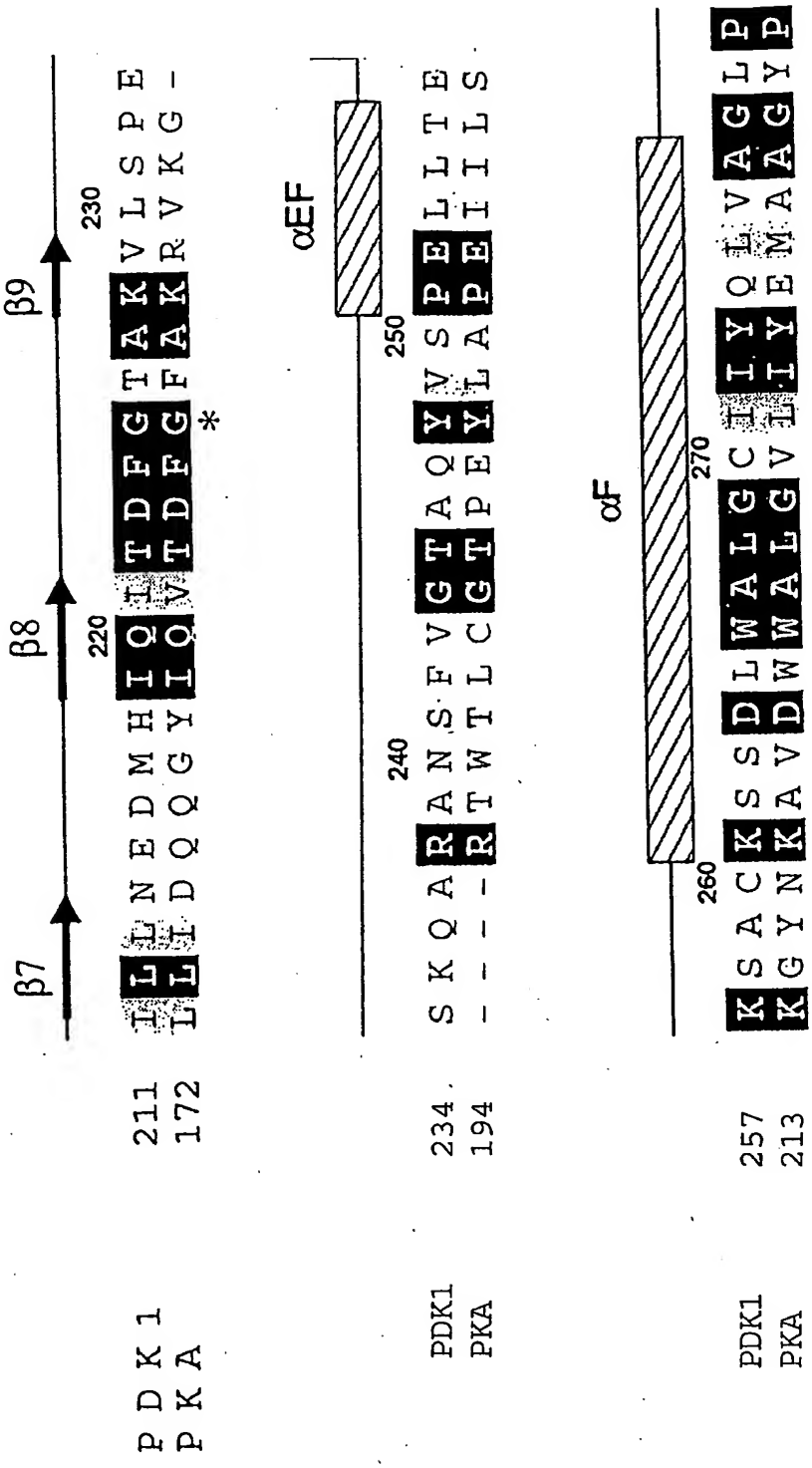


Figure 3:page 3

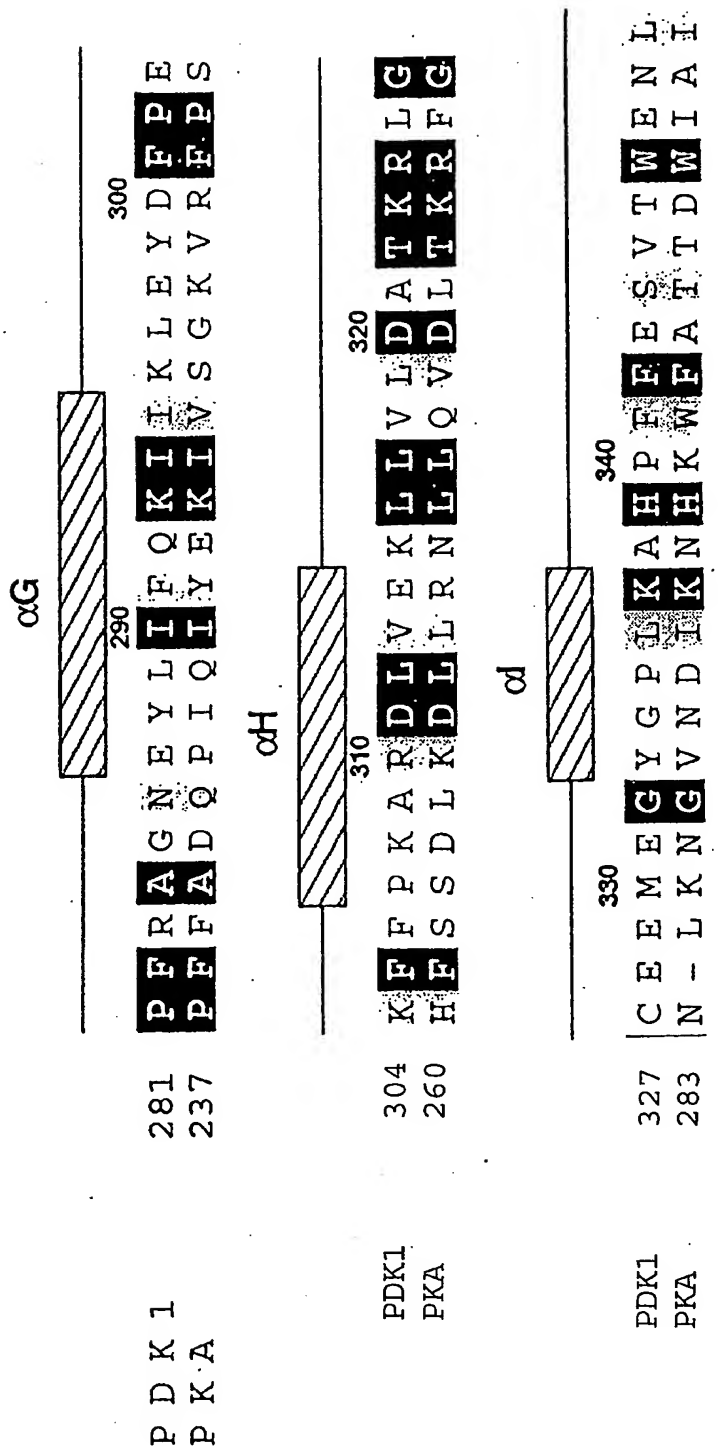


Figure 3:page 4

Figure 4: page 1

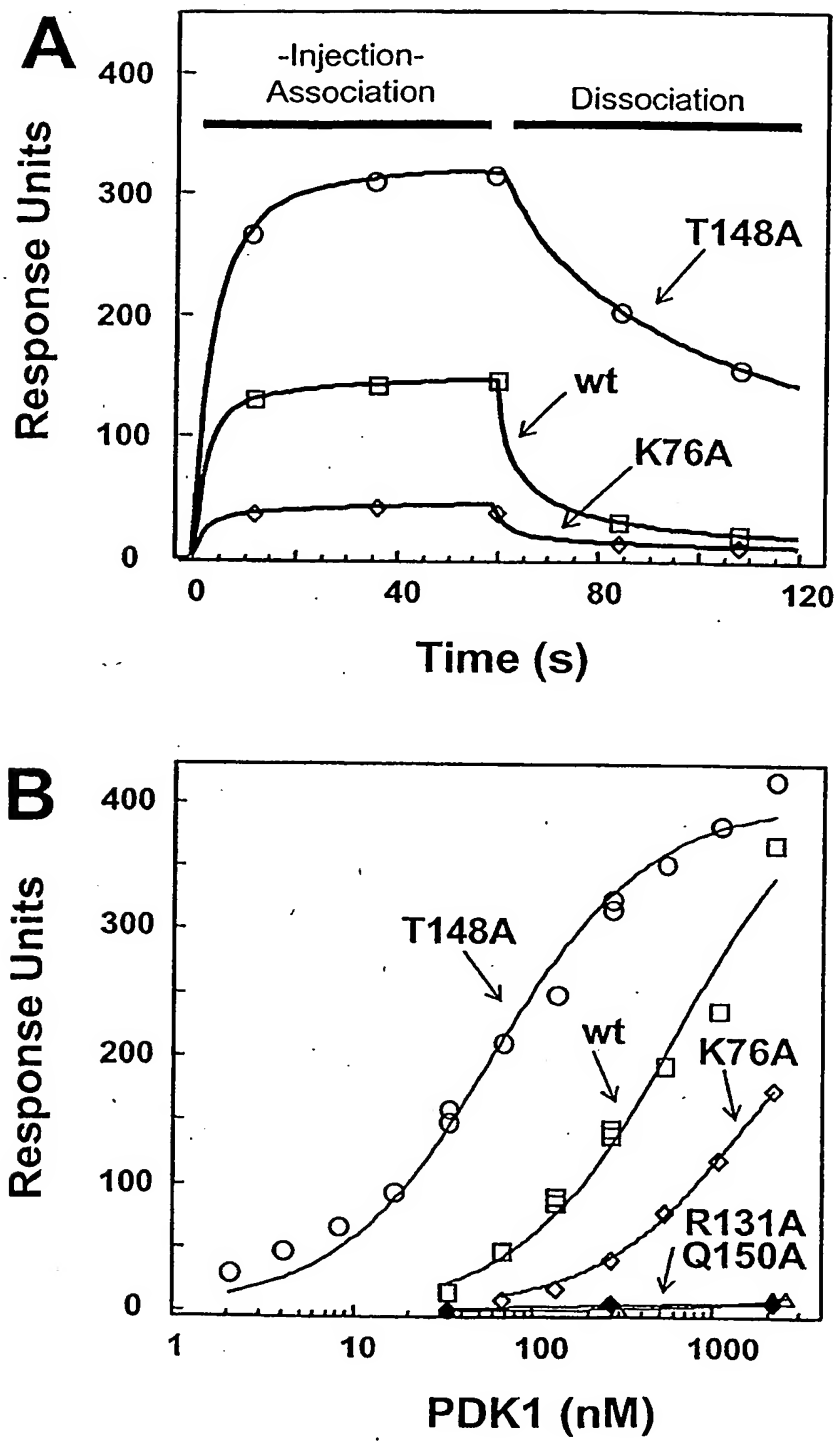


Figure 4: page 2

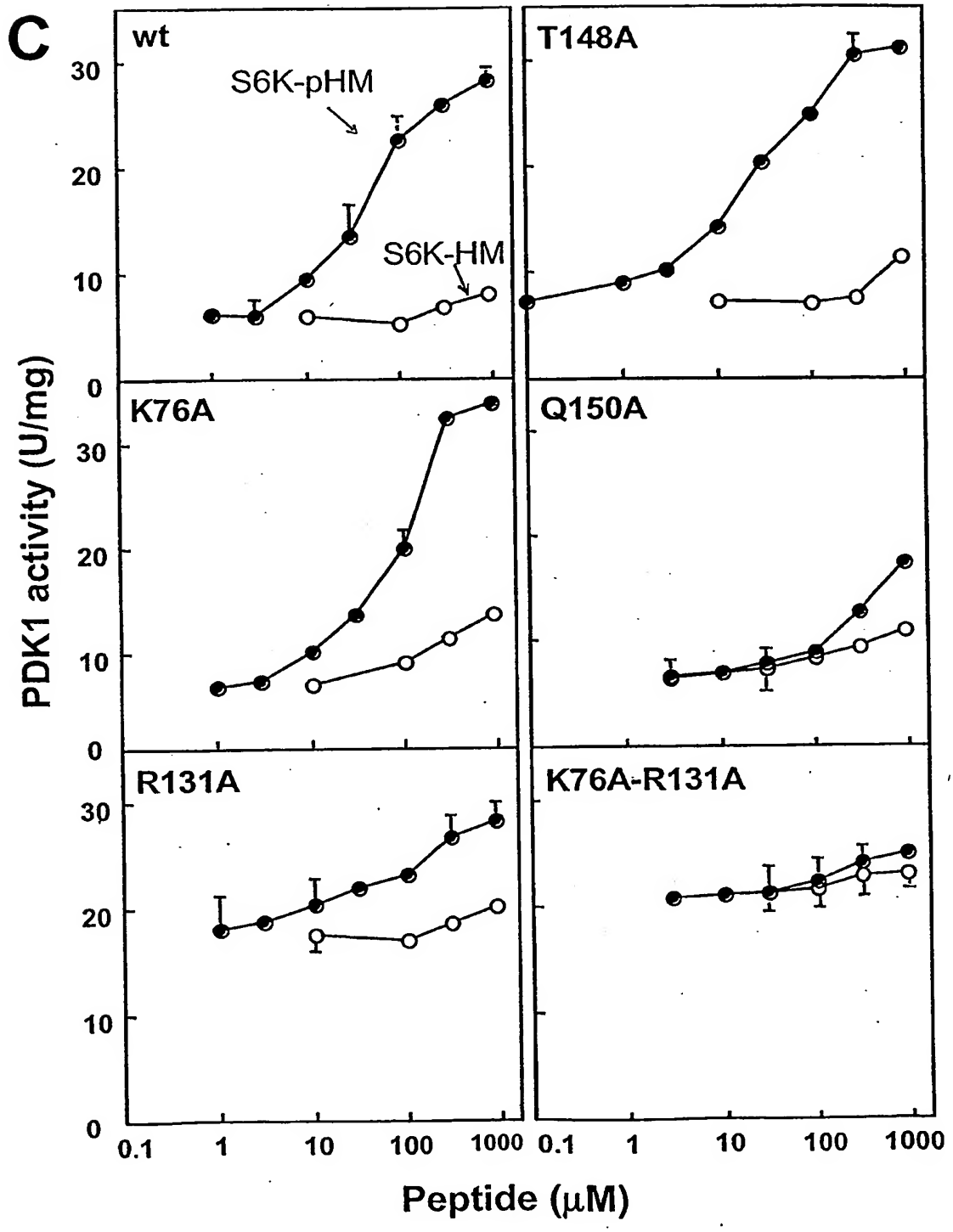
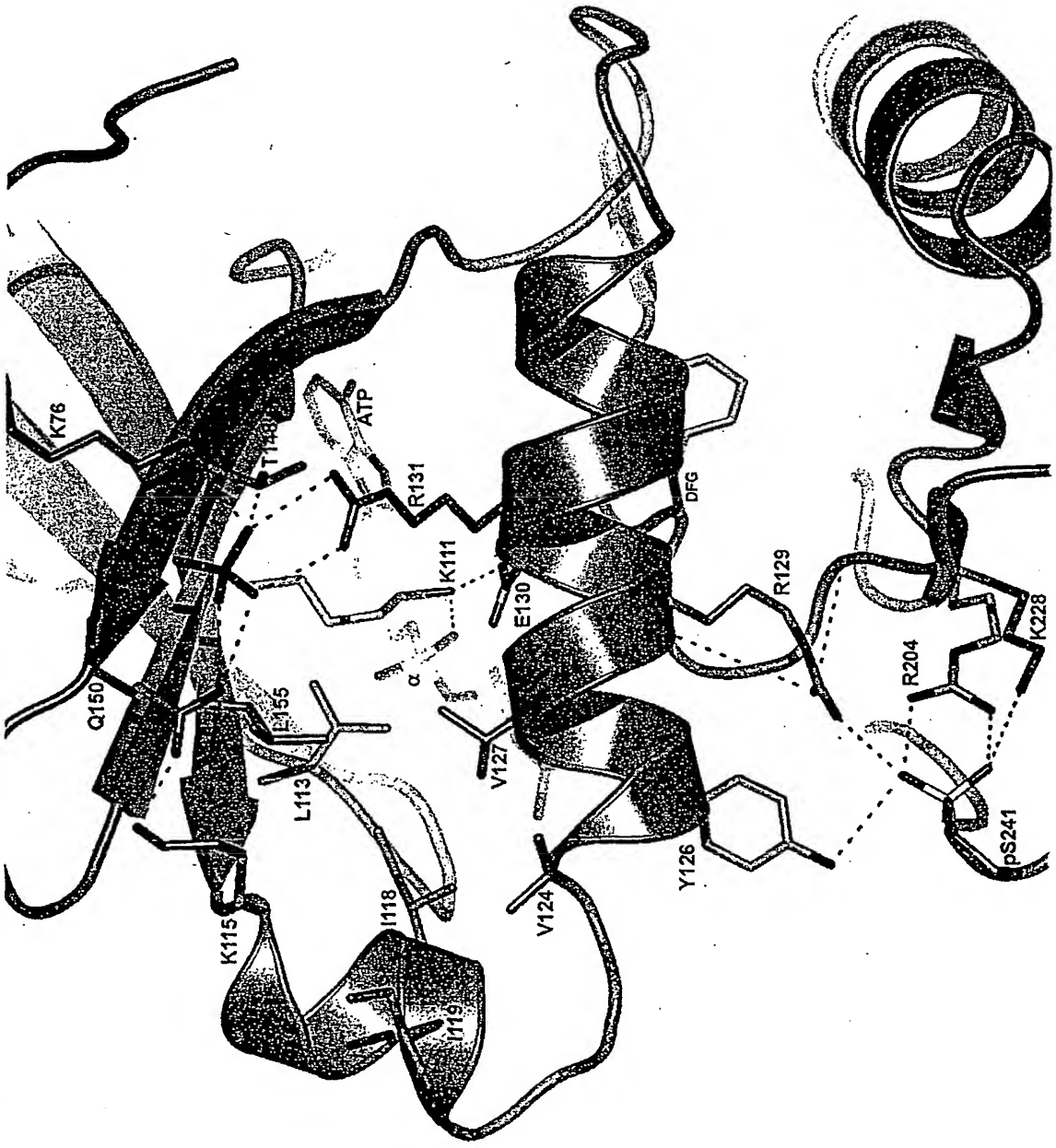


Figure 5:page 1



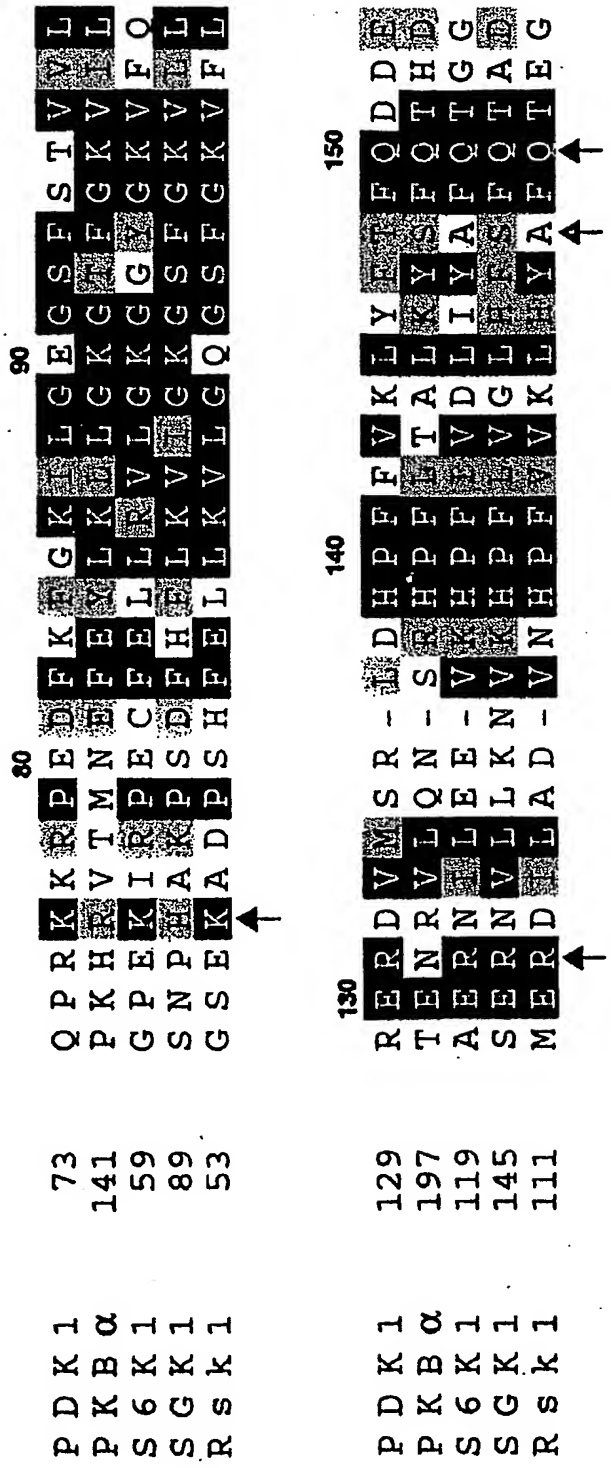


Figure 5: page 2

Figure 6: page 1

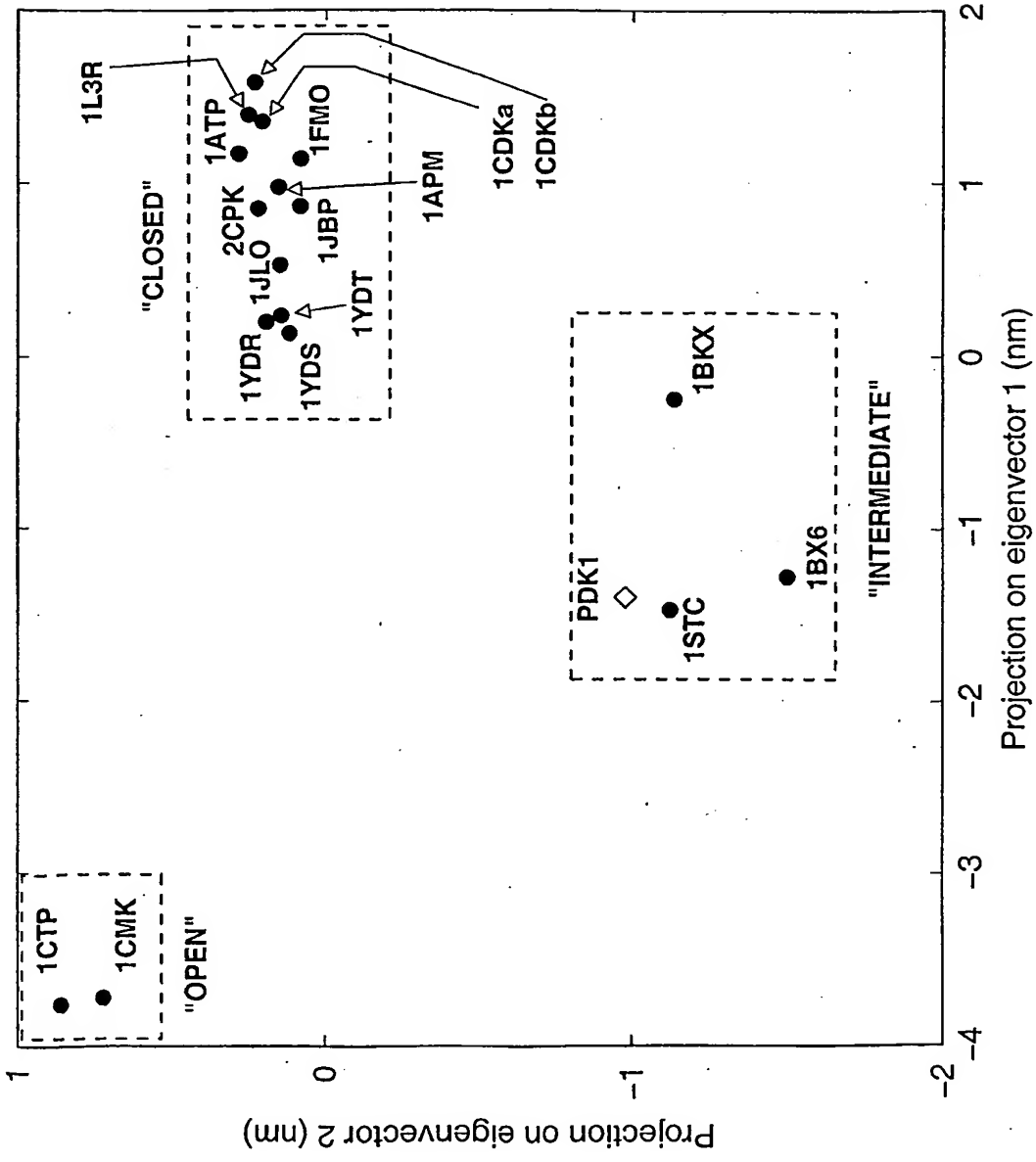


Figure 6: page 2

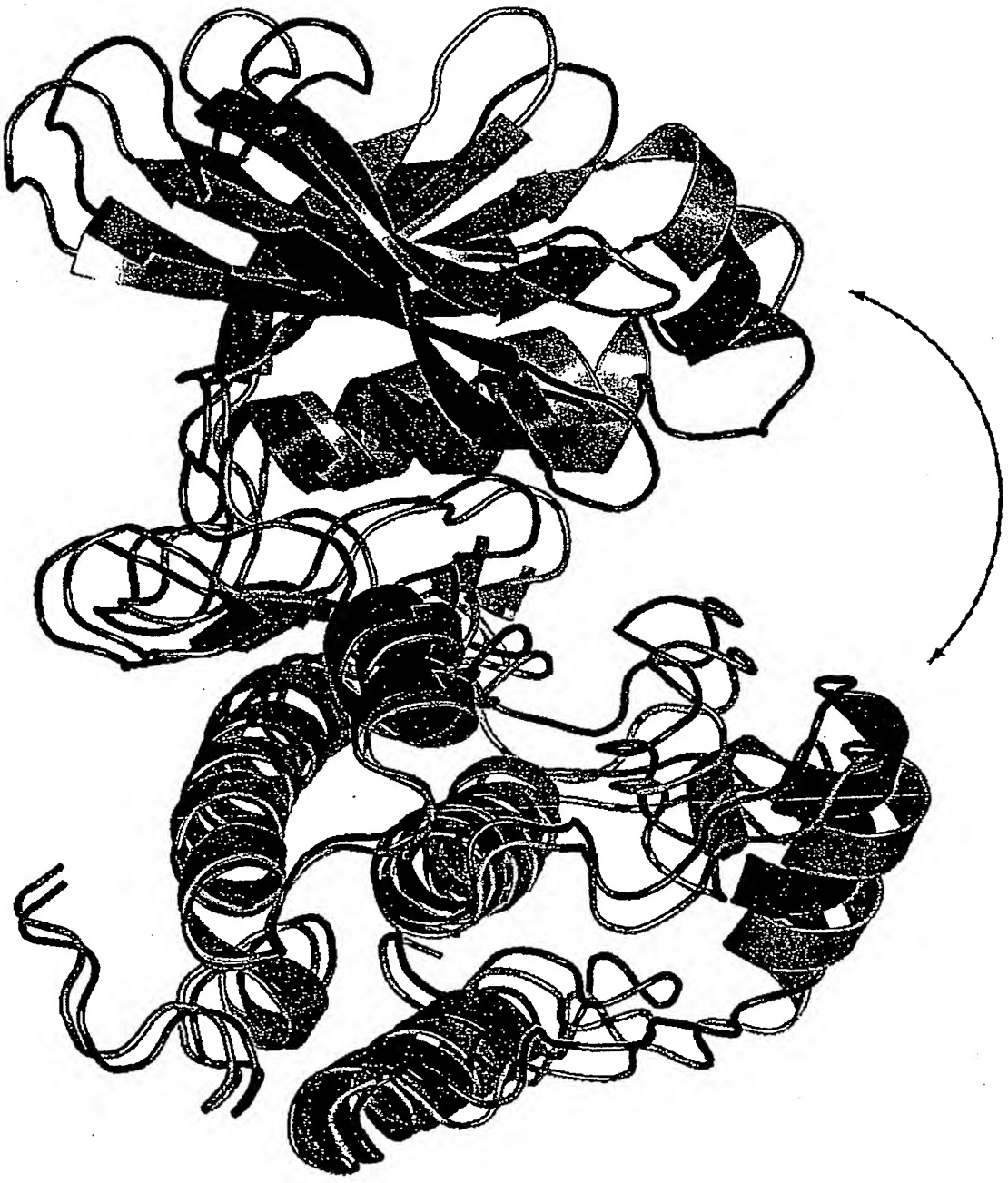


Figure 7: page 1

Figure 7: page 2

Gln 150 ↓ ↓ Leu 155

p70S6Kalpha	156	VDLIYAFQTGGKLYLILEYLSGGELFMQLEREGIFMEDTACFYLAEISMALGHLHQ-KGI
p70S6Kbeta	145	VELAYAFQTGGKLYLILECLSGGELFTHLEREGIFLEDTACFYLAEITLALGHLHS-QGI
p90RSK1	131	VKLHYAFQTEGKLYLILDFLRGGDLFTRLSKEVMFTEEDVKFYLAELALALDHLHS-LGI
p90RSK2	131	VKLHYAFQTEGKLYLILDFLRGGDLFTRLSKEVMFTEEDVKFYLAELALALDHLHS-LGI
p90RSK3	122	VKLHYAFQTEGKLYLILDFLRGGDLFTRLSKEVMFTEEDVKFYLAELALALDHLHS-LGI
MSK1	115	VTLHYAFQTETKLHLILDYINGGELFTHLSQRERFTEHEVQIYVGEIVLALEHLHK-LGI
MSK2	83	VTLHYAFQTDAKLHLILDYVSGGEMFTHLYQRQYFKEAEVRVYGGEIVLALEHLHK-LGI
PKBalpha	211	TALKYSFQTHDRLCFVMEYANGGELFFHLSRERVFSEDRARFYGAEIVSALDYLHSEKNV
PKBbeta	213	TALKYAFQTHDRLCFVMEYANGGELFFHLSRERVFTEERARFYGAEIVSALEYLHS-RDV
PKBgamma	209	TSLKYSFQTKDRLCFVMEYVNGGELFFHLSRERVFSEDRTRFYGAEIVSALDYLHS-GKI
PRK1	679	VNLFGCFQTPEHVCFVMEYSAGGDLMLHIHSD-VFSEPRAIFYSACVVLGLQFLHE-HKI
PRK2	721	VNLFACFQTKEHVCFVMEYAAGGDLMMHIHTD-VFSEPRAVFYAACVVLGLQYLHE-HKI
SGK1	160	VGLHFSFQTADKLYFVLDYINGGELFYHLQRERCFLEPRARFYAAEIASALGYLHS-IKI
SGK3	157	VGLHYSFQTTEKLYFVLDFVNGGELFFHLQRERSFPEHRARFYAAEIASALGYLHS-IKI
SGK2	157	VGLRYSFQTPEKLYFVLDYVNGGELFFHLQRERRFLEPRARFYAAEVASAIGYLHS-LNI
PKCbeta	404	TQLHSCFQTMDRLYFVMEYVNGGDLMYHIQQVGRFKEPHAVFYAAEIAIGLFFLQS-KGI
PKCbetaII	404	TQLHSCFQTMDRLYFVMEYVNGGDLMYHIQQVGKFKEPQAVFYAAEISIGLFFLHK-RGI
PKCalpha	401	TQLHSCFQTVDRLYFVMEYVNGGDLMYHIQQVGKFKEPQAVFYAAEIAIGLFFLHN-QGI
PKCgamma	418	TQLHSTFQTPDRLYFVMEYVTGGDLMYHIQQLGKFKEPHAAFYAAEIAIGLFFLHN-RGI
PKCzeta	306	VGLHSCFQTTSRLFLVIEYVNGGDLMFHMQRQRKLPEEHARFYSAEISLALNYLHE-RGI
PKCiota	307	VGLHSCFQTESRLFFVIEYVNGGDLMFHMQRQRKLPEEHARFYSAEISLALNYLHE-RGI
PKCdelta	411	THLICTFQTKDHLFFVMEFLNGGDLMYHIQDKGRFELYRATFYAAEIMCGLQFLHS-KGI
PKAgamma	105	VKLQFSFKDNSYLYLVMEYVPGGEMFSRLQRVGRFSEPHACFYAAQVVLAVQYLHS-LDL
PDK1	143	VKLYFTFQDDEKLYFGLSYAKNGELLKYIRKIGSFDETCTRFYTAEIVSALEYLHG-KGI

Figure 7: page 3

```
p70S6Kalpha  215 IYRDLKPENIMLNHQGHVKLTDFGLCKESIHDGT---VTHTFCGTIEYMAPEILM--RSG
p70S6Kbeta   204 IYRDLKPENIMLSSQGHIKLTDFGLCKESIHEGA---VTHTFCGTIEYMAPEILV--RSG
p90RSK1      190 IYRDLKPENILLDEEGHIKLTDFGLSKESIDHEK---KAYSFCGTVEYMAPEVVN--RRG
p90RSK2      190 IYRDLKPENILLDEEGHIKLTDFGLSKESIDHEK---KAYSFCGTVEYMAPEVVN--RRG
p90RSK3      181 IYRDLKPENILLDEEGHIKITDFGLSKEAIDHDK---RAYSFCGTIEYMAPEVVN--RRG
MSK1         174 IYRDIKLENILLDSNGHVVLTDFGLSKEFVADET--ERAYSFCGTIEYMAPDIVRGGDSG
MSK2         142 IYRDLKLENVLLDSEGHIVLTDFGLSKEFLTEEK--ERTFSFCGTIEYMAPEIIR-SKTG
PKBalpha     271 VYRDLKLENLMLDKDGHIKITDFGLCKEGIKDGA---TMKTFCGTPEYLAPEVLE--DND
PKBbeta      272 VYRDIKLENLMLDKDGHIKITDFGLCKEGISDGA---TMKTFCGTPEYLAPEVLE--DND
PKBgamma     268 VYRDLKLENLMLDKDGHIKITDFGLCKEGITDAA---TMKTFCGTPEYLAPEVLE--DND
PRK1         737 VYRDLKLDNLLLDTEGYVKIADFGLCKEGMGYGD---RTSTFCGTPEFLAPEVLT--DTS
PRK2         779 VYRDLKLDNLLLDTEGFVKIADFGLCKEGMGYGD---RTSTFCGTPEFLAPEVLT--ETS
SGK1         219 VYRDLKPENILLDSQGHIVLTDFGLCKENIEHNS---TTSTFCGTPEYLAPEVLH--KQP
SGK3         216 VYRDLKPENILLDSVGHVVLTDFGLCKEGIAISD---TTTTFCGTPEYLAPEVIR--KQP
SGK2         216 IYRDLKPENILLDCQGHVVLTDFGLCKEGVEPED---TTSTFCGTPEYLAPEVLR--KEP
PKCbeta      463 IYRDLKLDNVMLDSEGHIKIADFGMCKENIWDGV---TTKTFCGTPDYIAPEIIA--YQP
PKCbetaII    463 IYRDLKLDNVMLDSEGHIKIADFGMCKENIWDGV---TTKTFCGTPDYIAPEIIA--YQP
PKCalpha     460 IYRDLKLDNVMLDSEGHIKIADFGMCKEHMMDGV---TTRTFCGTPDYIAPEIIA--YQP
PKCgamma     477 IYRDLKLDNVMLDAEGHIKITDFGMCKENVFPGT---TTRTFCGTPDYIAPEIIA--YQP
PKCzeta      365 IYRDLKLDNVLLDADGHIKLTDYGMCKEGLGPGD---TTSTFCGTPNYIAPEILR--GEE
PKCiota      366 IYRDLKLDNVLLDSEGHIKLTDYGMCKEGLRPGD---TTSTFCGTPNYIAPEILR--GED
PKCdelta     470 IYRDLKLDNVLLDRDGHIKIADFGMCKENIFGES---RASTFCGTPDYIAPEILQ--GLK
PKAgamma     164 IHRDLKPENLLIDQQGYLQVTDFGFAKRVKG------RTWTLCGTPEYLAPEIIL--SKG
PDK1         202 IHRDLKPENILLNEDMHIQITDFGTAKVLSPESKQA-RANSFVGTAQYVSPELLT--EKS
```

Figure 7: page 4

```
p70S6Kalpha  270 HNRAVDWWSLGALMYDMLTGAPPFTGE-----NRK---KTIDKILKCKLNLPPYLTQEA
p70S6Kbeta   259 HNRAVDWWSLGALMYDMLTGSPPFTAE-----NRK---KTMDKIIRGKLALPPYLTPDA
p90RSK1      245 HTQSADWWSFGVLMFEMLTGTLPFQGK-----DRK---ETMTMILKAKLGMPQFLSPEA
p90RSK2      245 HTQSADWWSFGVLMFEMLTGTLPFQGK-----DRK---ETMTMILKAKLGMPQFLSPEA
p90RSK3      236 HTQSADWWSFGVLMFEMLTGSLPFQGK-----DRK---ETMALILKAKLGMPQFLSGEA
MSK1         232 HDKAVDWWSLGVLMYELLTGASPFTVDG-----EKNSQAEISRRILKSEPPYPQEMSALA
MSK2         199 HGKAVDWWSLGILLFELLTGASPFTLEG-----ERNTQAEVSRRILKCSPPFPPRIGPVA
PKBalpha     326 YGRAVDWWGLGVVMYEMMCGRLPFYNQD-----------HEKLFELILMEEIRFPRTLGPEA
PKBbeta      327 YGRAVDWWGLGVVMYEMMCGRLPFYNQD-----------HERLFELILMEEIRFPRTLSPEA
PKBgamma     323 YGRAVDWWGLGVVMYEMMCGRLPFYNQD-----------HEKLFELILMEDIKFPRTLSSDA
PRK1         792 YTRAVDWWGLGVLLYEMLVGESPFPGDD-----------EEEVFDSIVNDEVRYPRFLSAEA
PRK2         834 YTRAVDWWGLGVLIYEMLVGESPFPGDD-----------EEEVFDSIVNDEVRYPRFLSTEA
SGK1         274 YDRTVDWWCLGAVLYEMLYGLPPFYSRN-----------TAEMYDNILNKPLQLKPNITNSA
SGK3         271 YDNTVDWWCLGAVLYEMLYGLPPFYCRD-----------VAEMYDNILHKPLSLRPGVSLTA
SGK2         271 YDRAVDWWCLGAVLYEMLHGLPPFYSQD-----------VSQMYENILHQPLQIPGGRTVAA
PKCbeta      518 YGKSVDWWAFGVLLYEMLAGQAPFEGED-----------EDELFQSIMEHNVAYPKSMSKEA
PKCbetaII    518 YGKSVDWWAFGVLLYEMLAGQAPFEGED-----------EDELFQSIMEHNVAYPKSMSKEA
PKCalpha     515 YGKSVDWWAYGVLLYEMLAGQPPFDGED-----------EDELFQSIMEHNVSYPKSLSKEA
PKCgamma     532 YGKSVDWWSFGVLLYEMLAGQPPFDGED-----------EEELFQAIMEQTVTYPKSLSREA
PKCzeta      420 YGFSVDWWALGVLMFEMMAGRSPFDIIT--DNPDMNTEDYLFQVILEKPIRIPRFLSVKA
PKCiota      421 YGFSVDWWALGVLMFEMMAGRSPFDIVGSSDNPDQNTEDYLFQVILEKQIRIPRSLSVKA
PKCdelta     525 YTFSVDWWSFGVLLYEMLIGQSPFHGDD-----------EDELFESIRVDTPHYPRWITKES
PKAgamma     216 YNKAVDWWALGVLIYEMAVGFPPFYADQ-----------PIQIYEKIVSGRVRFPSKLSSDL
PDK1         259 ACKSSDLWALGCIIYQLVAGLPPFRAGN-----------EYLIFQKIIKLEYDFPEKFFPKA
```

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p70S6Kalpha  321 RDLLKKLLKRNAASRLGAGPG-DAGEVQAHPFFRHINWEELAR--KVEPPFKPLLQSE-
p70S6Kbeta   310 RDLVKKFLKRNPSQRIGGGPG-DAADVQRHPFFRHMNWDDLLAW--RVDPPFRPCLQSE-
p90RSK1      296 QSLLRMLFKRNPANRLGAGPD-GVEEIKRHSFFSTIDWNKLYRR--EIHPPFKPATGRP-
p90RSK2      296 QSLLRMLFKRNPANRLGAGPD-GVEEIKRHSFFSTIDWNKLYRR--EIHPPFKPATGRP-
p90RSK3      287 QSLLRALFKRNPCNRLGAGID-GVEEIKRHPFFVTIDWNTLYRK--EIKPPFKPALGRP-
MSK1         287 KDLIQRLLMKDPKKRLGCGPR-DADEIKEHLFFQKINWDDLAAK--KVPAPFKPVIRDE-
MSK2         254 QDLLQRLLCKDPKKRLGAGPQ-GAQEVRNHPFFQGLDWVALAAR--KIPAPFRPQIRSE-
PKBalpha     377 KSLLSGLLKKDPKQRLGGGSE-DAKEIMQHRFFAGIVWQHVYEK--KLSPPFKPQVTSE-
PKBbeta      378 KSLLAGLLKKDPKQRLGGGPS-DAKEVMEHRFFLSINWQDVVQK--KLLPPFKPQVTSE-
PKBgamma     374 KSLLSGLLIKDPNKRLGGGPD-DAKEIMRHSFFSGVNWQDVYDK--KLVPPFKPQVTSE-
PRK1         843 IGIMRRLLRRNPERRLGSSER-DAEDVKKQPFFRTLGWEALLAR--RLPPPFVPTLSGR-
PRK2         885 ISIMRRLLRRNPERRLGASEK-DAEDVKKHPFFRLIDWSALMDK--KVKPPFIPTIRGR-
SGK1         325 RHLLEGLLQKDRTKRLGAKDD--FMEIKSHVFFSLINWDDLINK--KITPPFNPNVSGP-
SGK3         322 WSILEELLEKDRQNRLGAKED--FLEIQNHPFFESLSWADLVQK--KIPPPFNPNVAGP-
SGK2         322 CDLLQSLLHKDQRQRLGSKAD--FLEIKNHVFFSPINWDDLYHK--RLTPPFNPNVTGP-
PKCbeta      569 VAICKGLMTKHPGKRLGCGPE-GERDIKEHAFFRYIDWEKLERK--EIQPPYKPKARDK-
PKCbetaII    569 VAICKGLMTKHPGKRLGCGPE-GERDIKEHAFFRYIDWEKLERK--EIQPPYKPKACG--
PKCalpha     566 VSICKGLMTKHPAKRLGCGPE-GERDVREHAFFRRIDWEKLENR--EIQPPFKPKVCG--
PKCgamma     583 VAICKGFLTKHPGKRLGSGPD-GEPTIRAHGFFRWIDWERLERL--EIPPPFRPRPCG--
PKCzeta      478 SHVLKGFLNKDPKERLGCRPQTGFSDIKSHAFFRSIDWDLLEKK--QALPPFQPQITDD-
PKCiota      481 ASVLKSFLNKDPKERLGCHPQTGFADIQGHPFFRNVDWDMMEQK--QVVPPFKPNISGE-
PKCdelta     576 KDILEKLFEREPTKRLGMTGN-----IKIHPFFKTINWTLLEKR--RLEPPFRPKVKSP-
PKAgamma     267 KDLLRSLLQVDLTKRFGNLRN-GVGDIKNHKWFATTSWIAIYEK--KVEAPFIPKYTGP-
PDK1         310 RDLVEKLLVLDATKRLGCEEMEGYGPLKAHPFFESVTWENLHQQTPPKLTAYLPAMSEDD
```

Figure 7: page 5

Figure 7: page 6

```
p70S6Kalpha  377 ----EDVSQFDSKFTRQTPVDSPDDSTLSESA----------NQVFLGFTYVAPSVLES-
p70S6Kbeta   366 ----EDVSQFDTRFTRQTPVDSPDDTALSESA----------NQAFLGFTYVAPSVLDS-
p90RSK1      352 ----EDTFYFDPEFTAKTPKDSP-GIPPSANA----------HQLFRGFSFVAITSDDE-
p90RSK2      352 ----EDTFYFDPEFTAKTPKDSP-GIPPSANA----------HQLFRGFSFVAITSDDE-
p90RSK3      343 ----EDTFHFDPEFTARTPTDSP-GVPPSANA----------HHLFRGFSFVASSLIQEP
MSK1         343 ----LDVSNFAEEFTEMDPTYSPAALPQSSE----------KLFQGYSFVAPSILFKR
MSK2         310 ----LDVGNFAEEFTRLEPVYSPPGSPPPGDP----------RIFQGYSFVAPSILFDH
PKBalpha     433 ----TDTRYFDEEFTAQMITITP---PDQDDS--MECVDSERRPHFPQFSYSASSTA---
PKBbeta      434 ----VDTRYFDDEFTAQSITITP---PDRYDS--LGLLELDQRTHFPQFSYSASIRE---
PKBgamma     430 ----TDTRYFDEEFTAQTITITP---PEKYDEDGMDCMDNERRPHFPQFSYSASGRE---
PRK1         899 ----TDVSNFDEEFTGEAPTLSP---PRD--A--R-PLTAAEQAAFLDFDFVAGGC----
PRK2         941 ----EDVSNFDDEFTSEAPILTP---PRE--P--R-ILSEEEQEMFRDFDYIADWC----
SGK1         380 ----NDLRHFDPEFTEEPVPNSIGKSPDSVLVT---ASVKEAAEAFLGFSYAPPT-DSFL
SGK3         377 ----DDIRNFDTAFTEETVPYSVCVSSDYSIVN---ASVLEADDAFVGFSYAPPSEDLFL
SGK2         377 ----ADLKHFDPEFTQEAVSKSIGCTPDTVAS----SS--GASSAFLGFSYAPEDDDILD
PKCbeta      625 ----RDTSNFDKEFTRQPVELTP---TDKLFIM---NLD---QNEFAGFSYTNPEFVINV
PKCbetaII    624 ----RNAENFDRFFTRHPPVLTP---PDQEVIR---NID---QSEFEGFSFVNSEFLKPE
PKCalpha     621 ----KGAENFDKFFTRGQPVLTP---PDQLVIA---NID---QSDFEGFSYVNPQFVHPI
PKCgamma     638 ----RSGENFDKFFTRAAPALTP---PDRLVLA---SID---QADFQGFTYVNPDFVHPD
PKCzeta      535 ----YGLDNFDTQFTSEPVQLTP---DDEDAIK---RID---QSEFEGFEYINPLLLSTE
PKCiota      538 ----FGLDNFDSQFTNEPVQLTP---DDDDIVR---KID---QSEFEGFEYINPLLMSAE
PKCdelta     628 ----RDYSNFDQEFLNEKARLSY---SDKNLID---SMD---QSAFAGFSFVNPKFEHLL
PKAgamma     323 ----GDASNFDDYEE-EELRISI---NEK-CA----------KEFSEF----------
PDK1         370 EDCYGNYDNLLSQFGCMQVSSSSSSSHSLSASDTGLPQRSGSNIEQYIHDLDSNSFELDLQ
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Figure 8

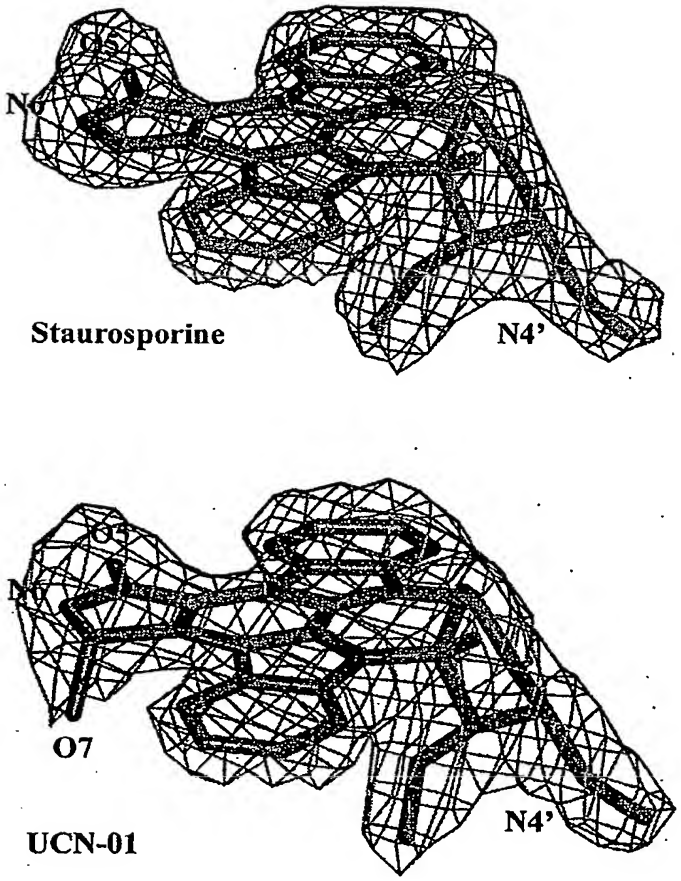

Figure 9: page 1

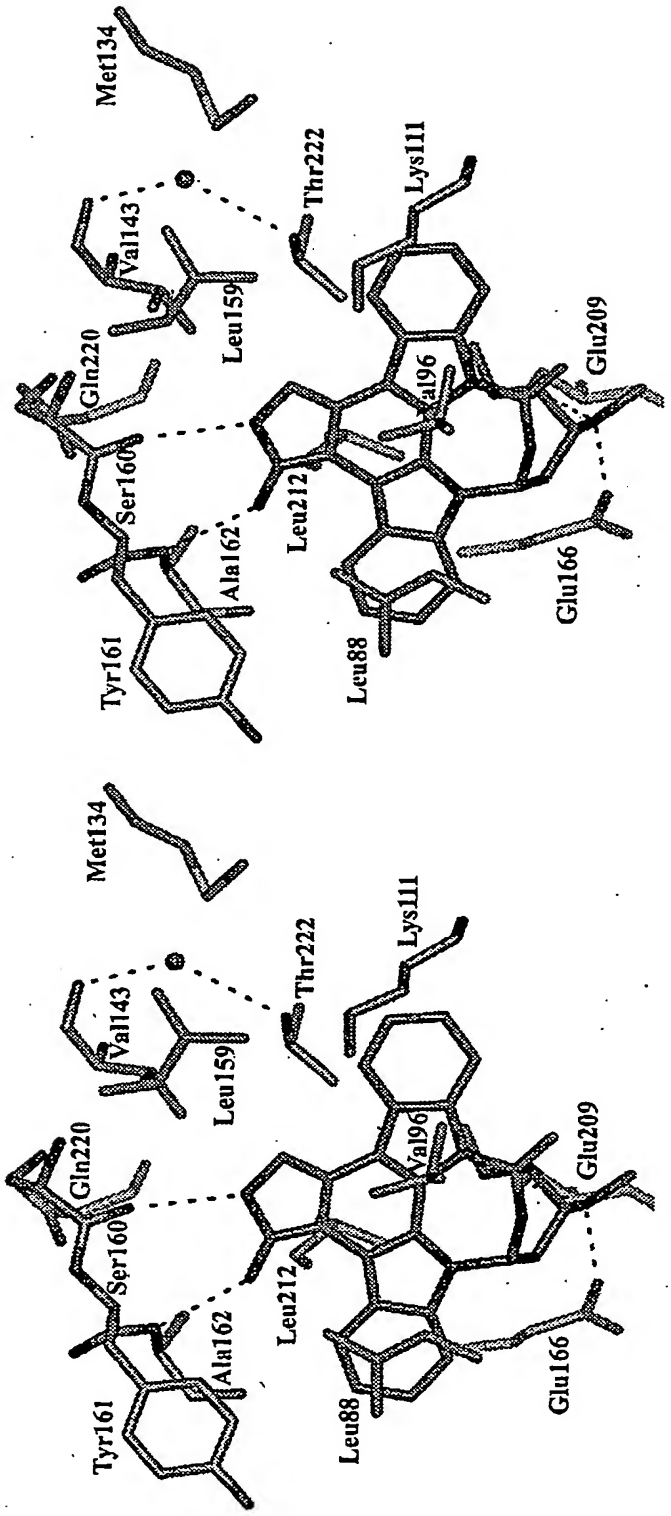
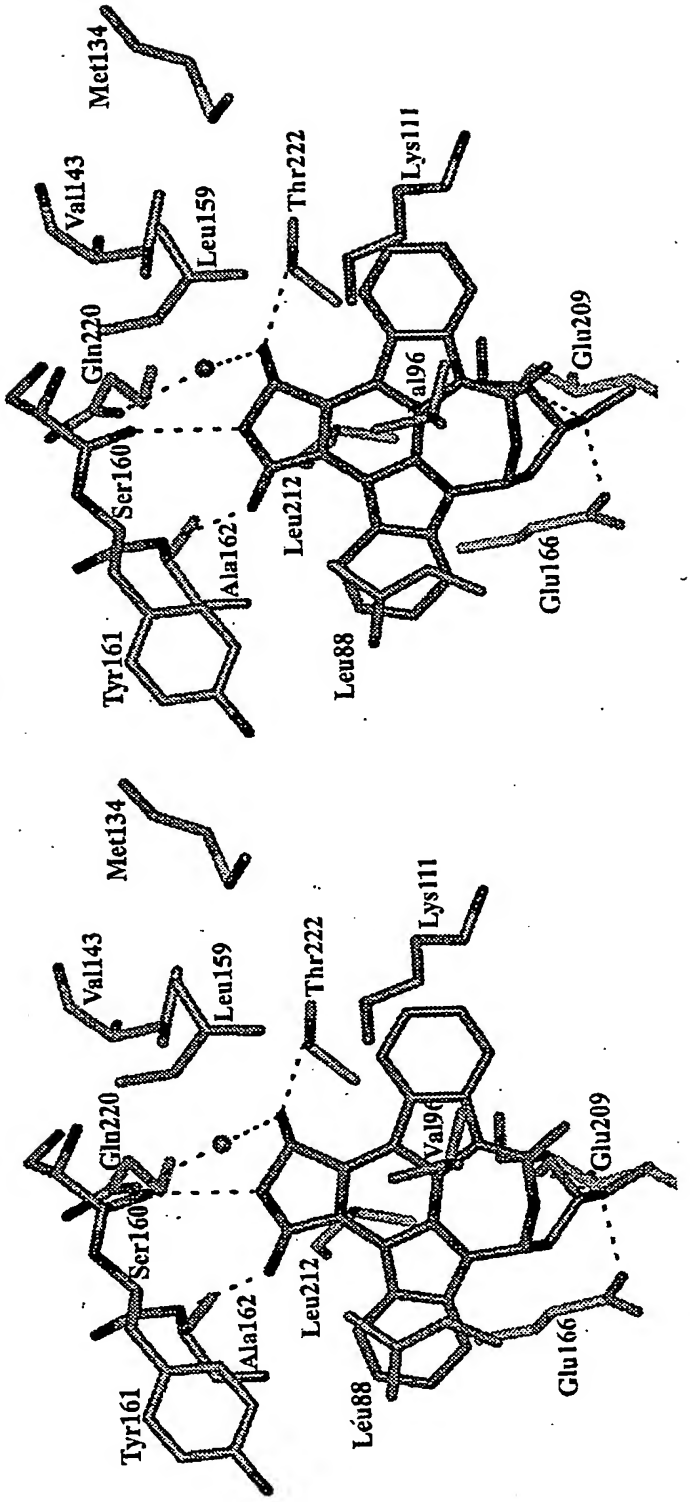
Figure 9: page 2